REMARKS

In the Office Action mailed August 22, 2007, claims 70-73, 75-84, and 87 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,019,165 issued to Batchelder in view of U.S. Patent Publication US 2003/0056939 A1. Claim 74 is rejected under 35 U.S.C. §103(a) as being unpatentable over Batchelder in view of Chu and further in view of U.S. Patent Number 6,580,610 issued to Morris et al. Claims 85, 86, and 88 are rejected under 35 U.S.C. §103(a) as being unpatentable over Batchelder in view of Chu and further in view of U.S. Patent Number 6,668,911 issued to Bingler. Further, claims 87 and 88 were objected to for informalities. Claim 87 was objected since the Examiner feels that the term "integrate" should be replaced with either "integrated" or "integral." Claim 88 is objected to since claim 88 depends from cancelled claim 1.

By this Reply, Applicant has amended claim 88 and added new claims 89-96. Claim 88 has been amended to change the dependency of claim 88 from claim 1 to claim 70. Newly added claims find support in the specification and drawings as filed. Specifically, support for new claims 89-96 may be found in the previously filed claims and descriptions contained in the specification between line 24, page 9 - line 31, page 10; line 10, page 15 - line 5, page 16; and FIGS 1, 2, 4, and 5. No new matter is added.

Objections to claims 87 and 88.

Applicant thanks the Examiner for suggesting modifications to claims 87 and 88. Applicant has amended claim 87 to replace the term "integrate" with "integrated" as suggested by the Examiner, and amended claim 88 to depend from claim 70 as correctly pointed out by the Examiner. Accordingly, Applicant respectfully requests withdrawal of the objections to claims 87 and 88.

Rejections under 35 U.S.C. §103(a).

Rejection of claims 70-73, 75-84, and 87.

Claims 70-73, 75-84, and 87 stand rejected as unpatentable under 35 U.S.C. §103(a) as being obvious over Batchelder in view of Chu. Applicant traverses these rejections. Claim 70 is independent and claims 71-88 are dependent from claim 70. Claim 70 recites, in part, a "pump [comprising] an impeller mechanically integrated with a pump rotor, wherein the impeller is submerged in the cooling liquid." The Examiner claims that Batchelder discloses all elements of claim 70 except the impeller mechanically integrated with the pump rotor. The Examiner relies on Chu for the teaching of an impeller mechanically integrated with the pump rotor and alleges that "it would have been obvious to one of ordinary skill in the art to substitute the magnetically connected impeller of Batchelder with the mechanically connected impeller of Chu since "the substitution of one known element for another would have yielded predictable results." See Office Action, page 3.

Batchelder discloses an active heat spreader plate ("20" of Fig. 2 of Batchelder) sandwiched between a heat generating component ("2" of Fig. 2 of Batchelder) and a heat absorbing device ("28" of Fig. 2 of Batchelder). Column 4, line 63 - column 5, line 11. The heat spreader plate of Batchelder is a "composite substrate," wherein the composite substrate is defined as "a rigid assembly of at least two patterned objects that hermetically enclose one or more interior cavities." (emphasis added). A heat transfer fluid fills the internal cavities of the heat spreader plate of Batchelder. See Column 4, lines 9 - 28. "Hermetic" means "air tight." See Merriam-Webster's online

dictionary at http://www.m-w.com/dictionary/hermetic. That is, the internal cavities containing the heat transfer fluid are to be maintained in an air tight manner in the heat spreader plate of Batchelder. The importance of maintaining the internal cavities of the active heat spreader plate in an air tight manner is apparent in Batchelder. Batchelder, in column 5 lines 37 - 59, describes techniques to fill the heat transfer fluid in the internal cavities of the heat spreader plate. One of the described techniques is to provide one or more access holes in the heat transfer plate. The heat transfer plate is initially assembled without the fluid and the fluid is then introduced into the internal cavities through these access holes. The atmosphere from the internal cavities is then removed and the access holes are sealed to hermetically seal the heat transfer fluid within the internal cavities. In an alternative technique, the heat transfer plate is provided with one or more rubber septums, and the heat transfer fluid is injected into the internal cavities through the rubber septum. The plain meaning of the term "hermetic" used in the specification, and descriptions of techniques to fill the internal cavities with heat transfer fluid would have suggested to a person of ordinary skill in the art the importance of maintaining the heat transfer plate of Batchelder in an air tight manner.

Substituting the magnetically connected impeller of Batchelder with the mechanically connected impeller of Chu (as suggested by the Examiner on page 3 of the Office Action) would require the top surface of the active heat spreader plate of Batchelder ("26" of "20" in Fig. 2 of Batchelder) to be modified with an access hole to pass the shaft coupling the impeller to the motor (unnumbered shaft coupling "26" and "16" in Fig. 1 of Chu) to pass through. Passage of this shaft through the top surface will allow atmosphere to enter the internal cavities, thereby destroying the hermeticity of the

active heat spreader plate of Batchelder. As M.P.E.P. states "[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." M.P.E.P. 2143.01 V.

The M.P.E.P. also notes that, when prior art elements are combined, although absolute predictability that the combination would work for its intended purpose is not required, "at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness." M.P.E.P. 2143.02 II. Batchelder requires that the internal cavities containing the heat transfer fluid be hermetic. Modifying the active heat transfer plate of Batchelder to accommodate the mechanically coupled impeller of Chu would destroy the hermeticity of the heat transfer plate. Based on the disclosed "hermetic" nature of the heat transfer plate, and the implied importance of maintaining the internal cavities in an air-tight manner (as evident from the techniques described to fill the internal cavities with the heat transfer fluid in Batchelder column 5 lines 37 - 59), a person of ordinary skill in the art would not expect that the heat transfer plate of Batchelder modified with the mechanically coupled impeller of Chu to work for its intended purpose.

Furthermore, the M.P.E.P. notes that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." In the heat transfer plate of Batchelder, an impeller is trapped inside the hermetic active heat transfer plate, and the impeller is motivated to rotate, and circulate the heat transfer fluid, using an external moving

magnetic field or by eddy currents generated by the external moving magnetic field. See Batchelder, Abstract; column 4, lines 10-30. Modifying the heat transfer plate of Batchelder by replacing the magnetically coupled impeller with the mechanically coupled impeller of Chu would, therefore, change the principle of operation of Batchelder.

For at least these reasons, independent claim 70 is allowable over Batchelder in view of Chu. Claims 71-78 depend from claim 70. Therefore, these claims are also allowable over Batchelder in view of Chu at least for the same reason that claim 70 is allowable over Batchelder in view of Chu. For at least these reasons the §103(a) rejection of claims 70-73, 75-84, and 87 should be withdrawn.

Rejection of claim 74.

Claim 74 stands rejected as being unpatentable under 35 U.S.C. §103(a) as being obvious over Batchelder in view of Chu and further in view of Morris. Applicant traverses this rejection of claim 74. Claim 74 depends from claim 70. Morris does not remedy the deficiency of Batchelder and Chu discussed earlier. Therefore, claim 74 is allowable over Batchelder in view of Chu and further in view of Morris for the same reason is claim 70 is allowable over Batchelder in view of Chu. For at least this reason, the §103(a) rejection of claim 74 should be withdrawn.

Rejection of claims 85, 86, and 87.

Claims 85, 86, and 87 stand rejected under 35 U.S.C. §103(a) as being obvious over Batchelder in view of Chu and further in view of Bingler. Applicant traverses these rejections of claims 85, 86, and 88. Claims 85, 86 and 88 depend from claim 70. Bingler does not remedy the deficiency of Batchelder and Chu discussed above.

Furthermore, incorporating the surface of the heat source in direct contact with the cooling liquid as taught by Bingler in the active heat transfer plate of Batchelder would destroy the hermeticity of the active heat transfer plate as discussed earlier. Additionally, modifying the active thermal plate of Batchelder to expose a surface of the heat source to the cooling liquid, as taught by Bingler, would drain the cooling liquid from the internal cavities of Batchelder (see FIG. 2 of Batchelder), thereby making the active heat transfer plate of Bingler "unsatisfactory for its intended purpose," as prohibited by M.P.E.P. 2143.01 V. For at least these reasons the §103(a) rejection of claims 85, 86, and 88 should be withdrawn.

New claims 89-96 are patentable over prior art of record.

New claims 89-96 are patentable over prior art of record at least for the reason that these prior art do not disclose "a reservoir configured to be coupled to the electronic component using the brace and the frame," or "a reservoir lockingly coupled to the electronic component by the retention mechanism," and "a fan configured to direct a stream of air over the heat radiator, the speed of the fan being configured to be changed independent of the speed of the pump to respond to the change in cooling requirement" as disclosed in new independent claims 89 and 95.

CONCLUSION

In view of the above remarks, Applicant respectfully submits that claims 70-88 are in condition for allowance. Accordingly, Applicant respectfully requests reconsideration and re-examination of this application and the timely allowance of the pending claims.

The Office Action contains characterizations of the claims and the related art, with which Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.

Applicant respectfully requests that the Examiner contact the undersigned, Roland G. McAndrews, if he considers that the present response does not overcome the prior art of record. The undersigned can be reached at (617) 452-1675.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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